Committee Hearing on Electricity Demand Forecasts

Staff Presentation

Forecast Overview

June 30, 2005

Forecast Process Overview

- Staff Electricity and Natural Gas Demand Forecasts
  - *CED 2006-2016 Staff Energy Demand Forecast* and *Energy Demand Forecast Methods Report*
  - Used in natural gas market assessment & analysis of the renewable portfolio standard
- Load Serving Entities (LSE) Submitted Forecasts:
  - Comparison to Staff Forecast Documented in *Electricity Demand Forecast Comparison Report*
- Adopted Forecast applications:
  - Basis for CPUC 2006 Procurement Process
  - Energy efficiency planning & analysis, Supply-Demand Outlooks, Cal. Gas Report, Grid Studies, possibly CPUC Resource Adequacy reference case.

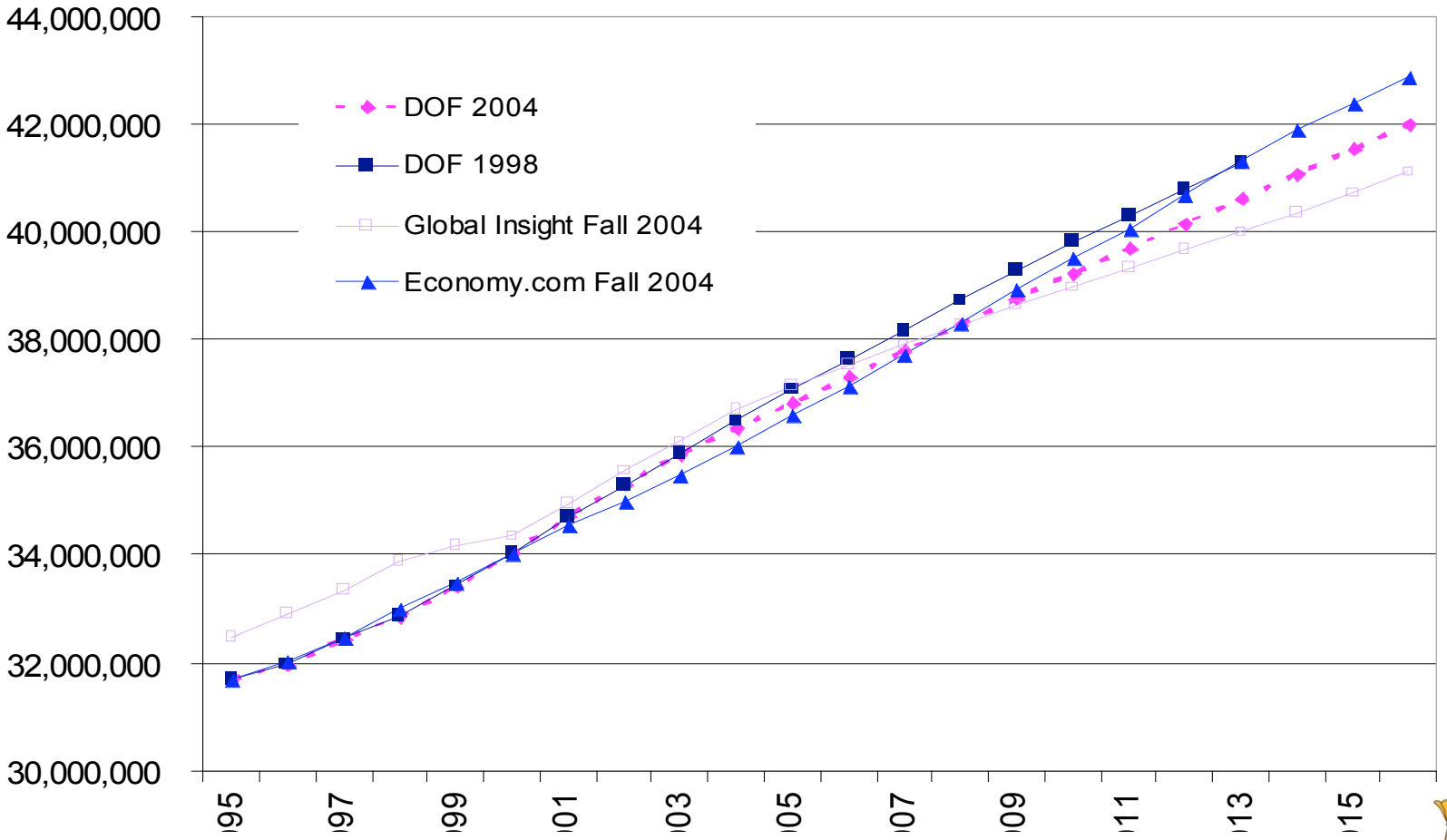
Staff Forecast Methods

- Annual energy consumption by sector and utility planning area
  - End use models for residential, commercial, and industrial sectors
  - Econometric models for ag. & water pumping
- Annual Peak Demand derived from energy forecast, historic weather & loads, and hourly load shapes
- Planning area forecasts disaggregated to control areas, congestion zones, & larger LSE's.

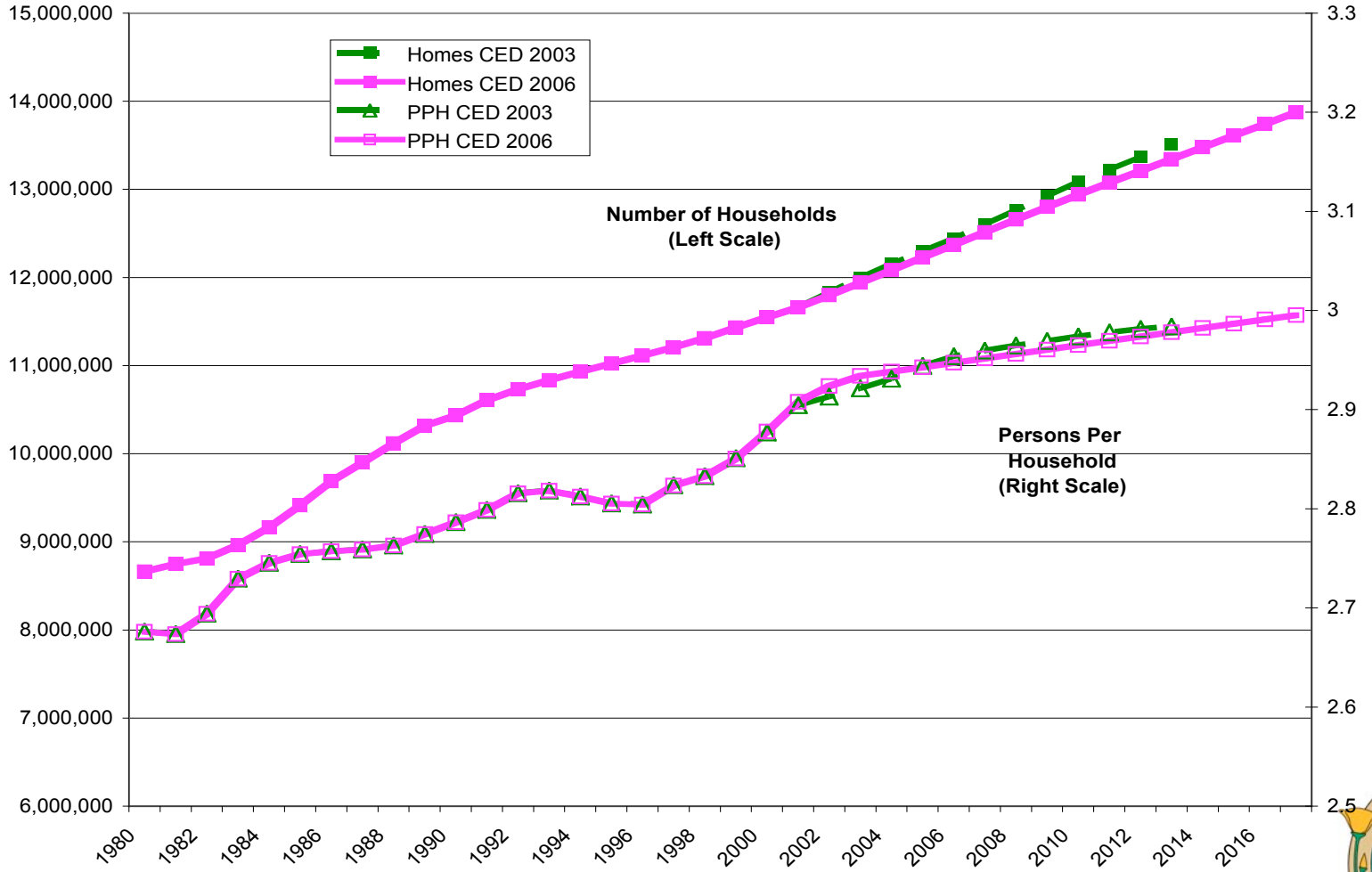
Major Changes From CED 2003-2013

- Lower Population forecast offset by higher persons per household
- Regional Economic Drivers
- Building and Appliance Standards
- Energy Efficiency Targets through 2008
- Recent history higher than previously forecast

Statewide Population Projections



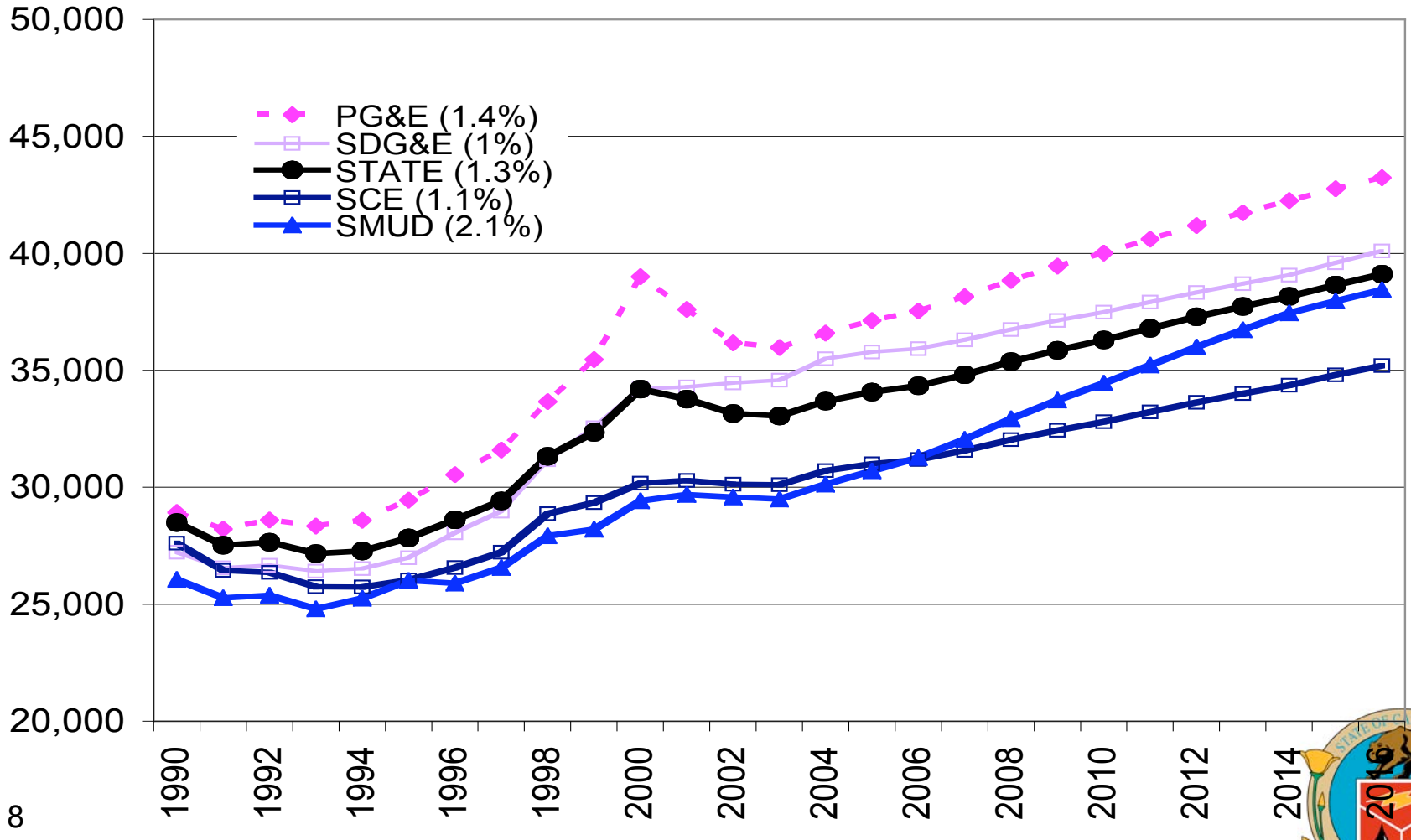
Household Assumptions



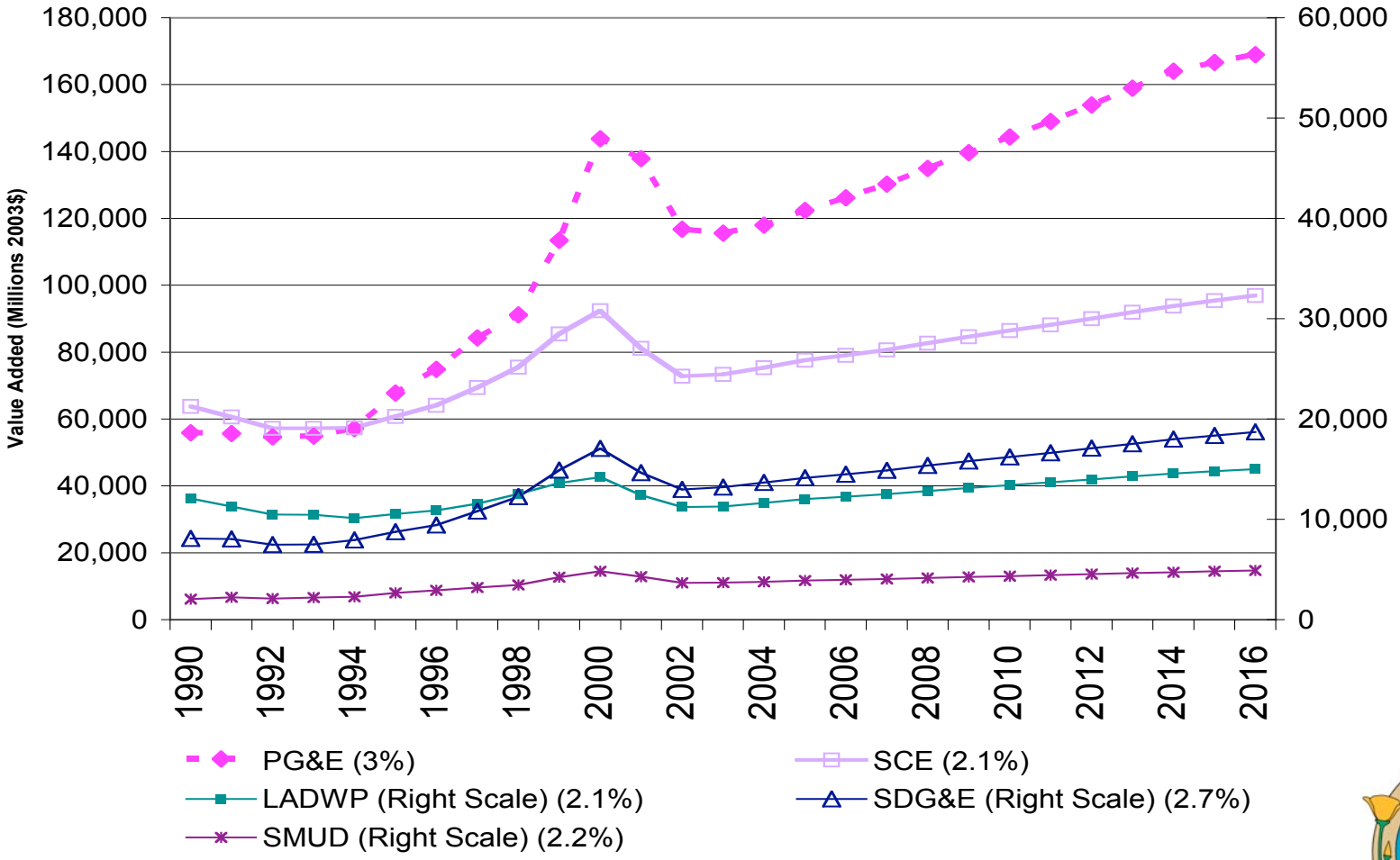
Regional Economic Drivers

- Economy.Com Oct./Jan 2004 forecast
- County-level projections
  - Personal Income
  - Value added
- CED 2003 projections did not capture distinct regional trends.

Real Per Capita Income by Planning Area
(Average Growth 2004-2016)



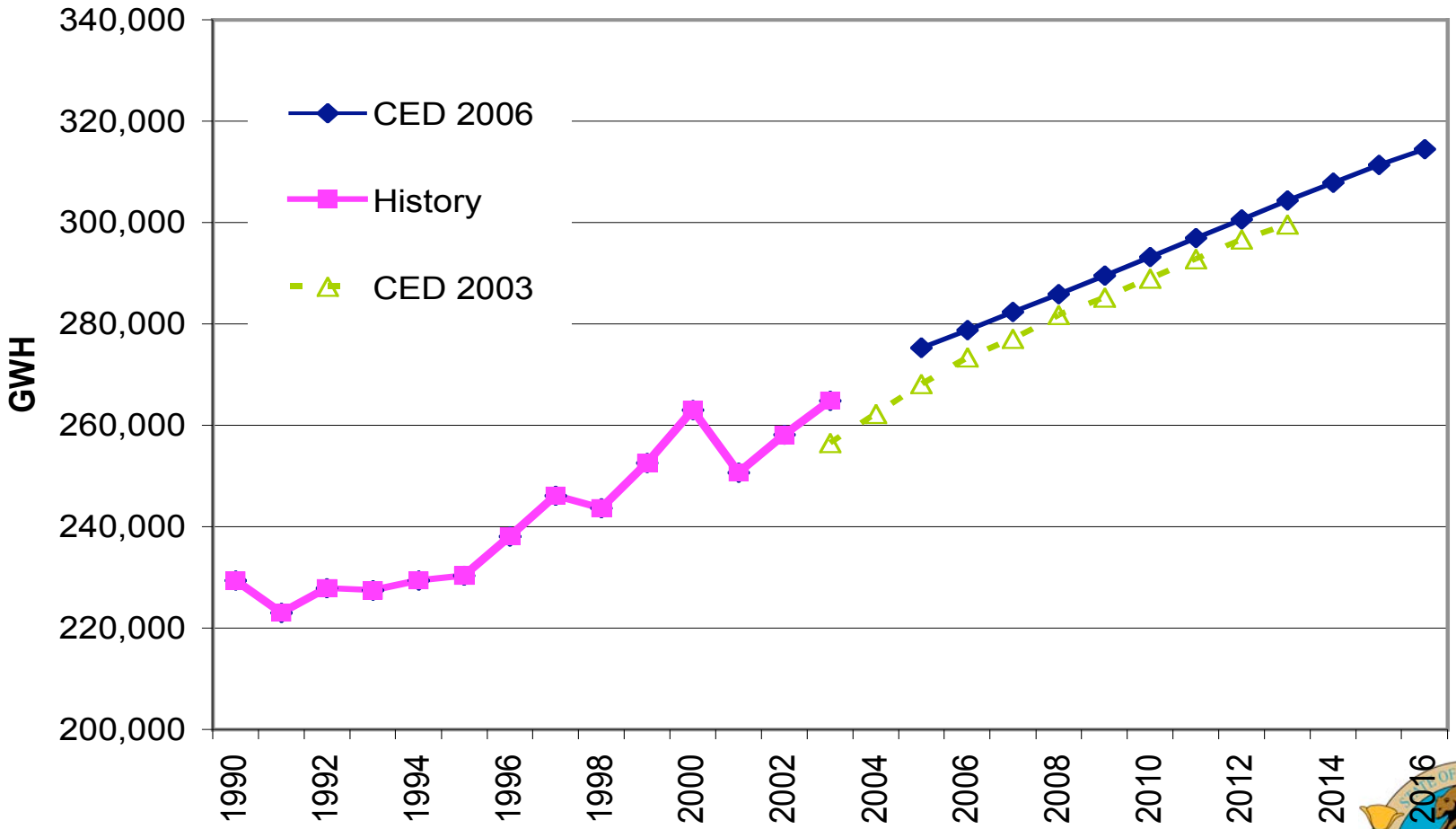
Industrial Value Added by Planning Area
(Average Growth 2004-2016)



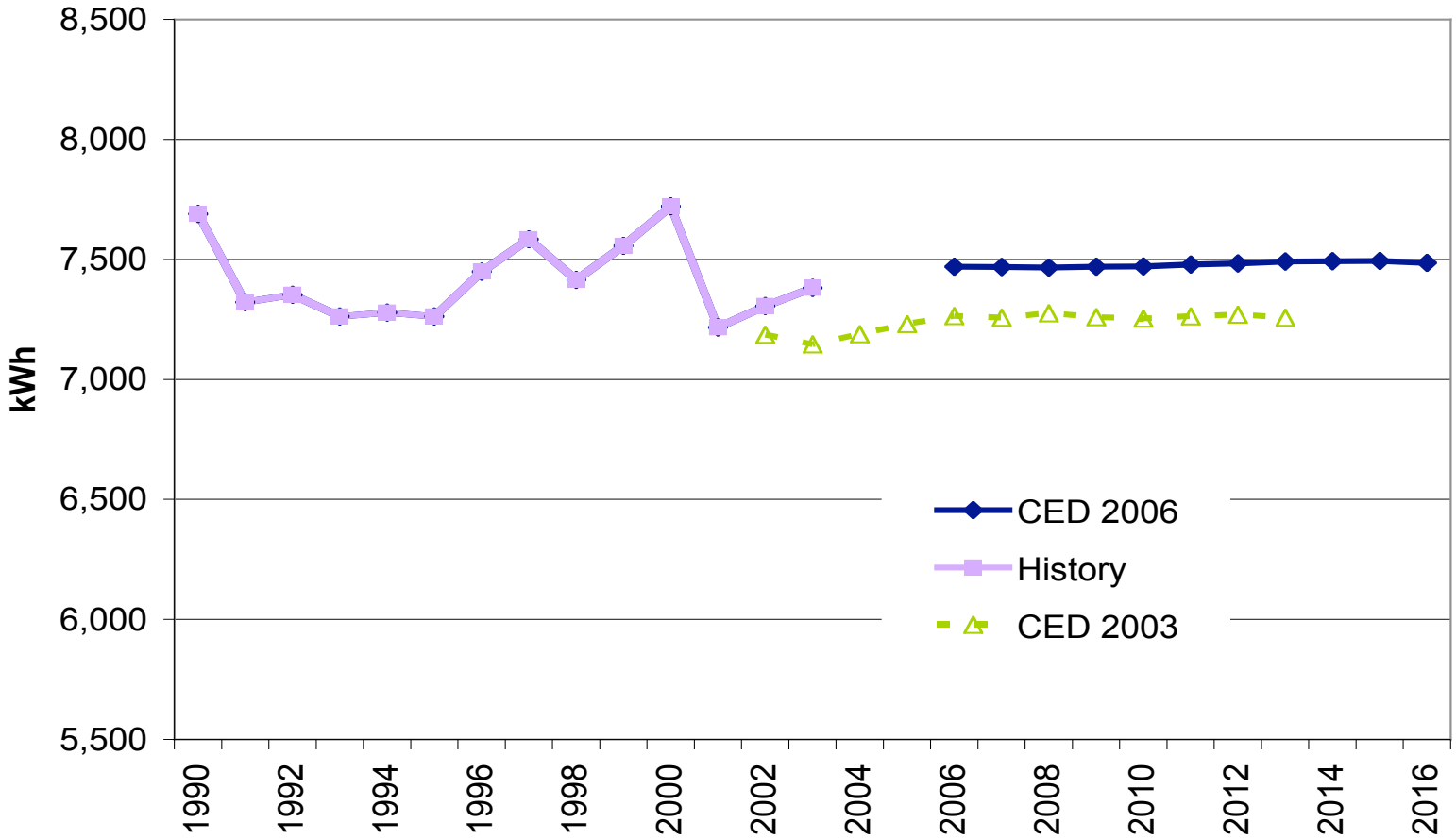
Programmatic Assumptions

- 2001, 2001, and 2005 Building & Appliance Standards Impacts added to energy forecasts
  - Commercial energy use reduced 0.5% by 2010
  - 2005 Federal AC standards reduce residential consumption 0.8 % (800 gwh), but not peak
- Impacts of CPUC Energy Efficiency goals through 2008
- Faster growth in self-generation

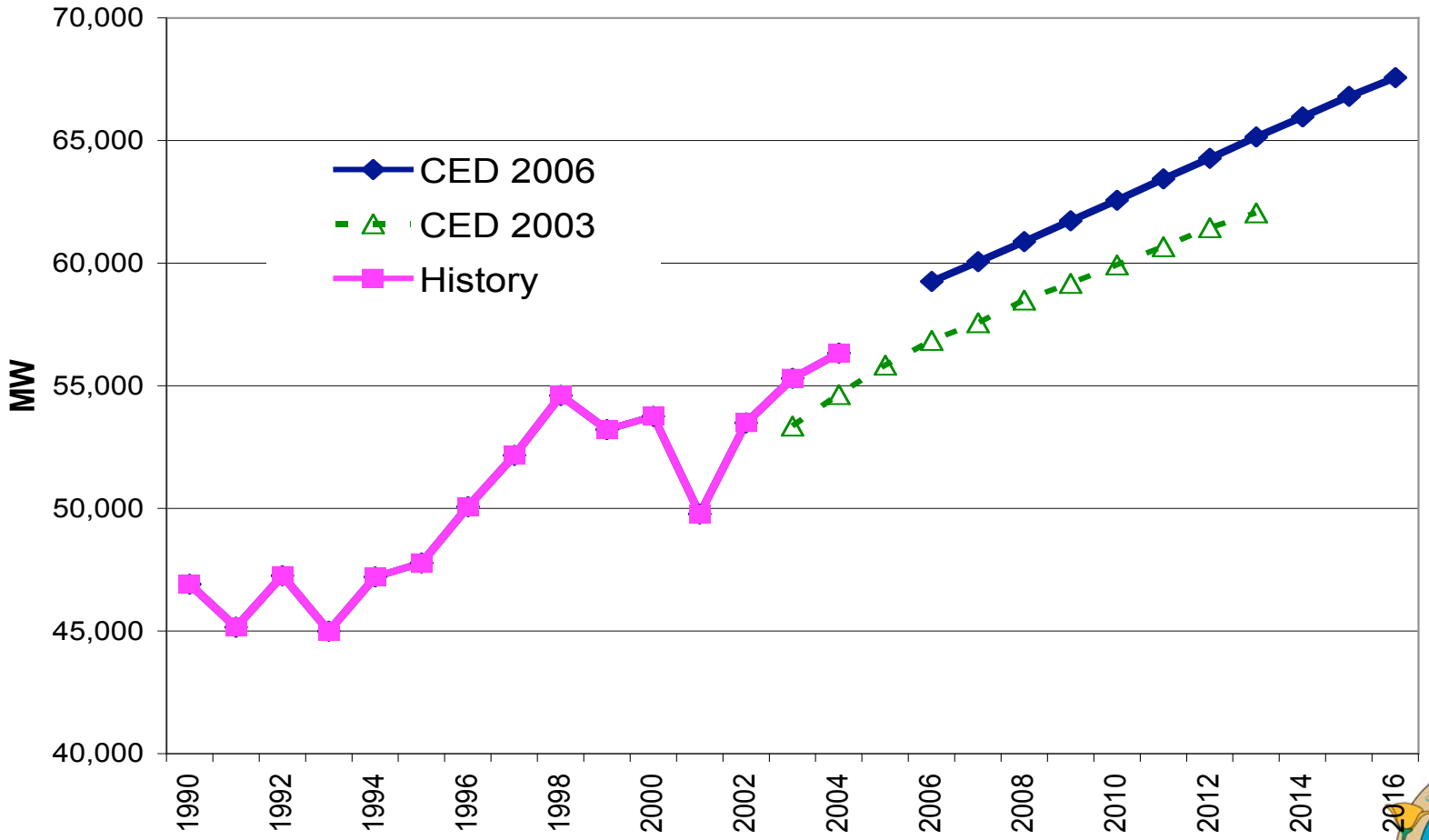
Statewide Energy Forecast (gWh)



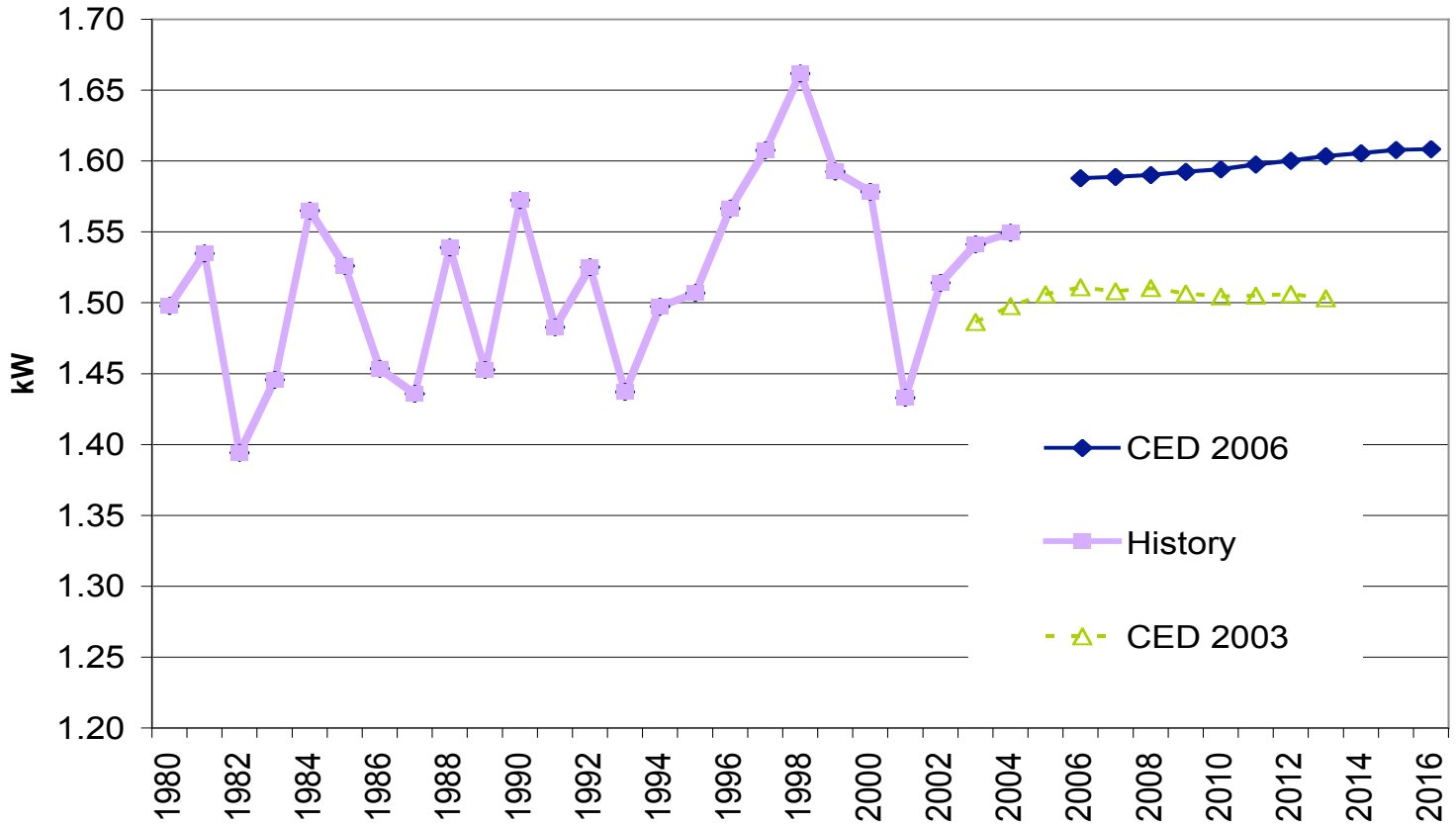
Consumption per Capita



Statewide Annual Peak Forecast



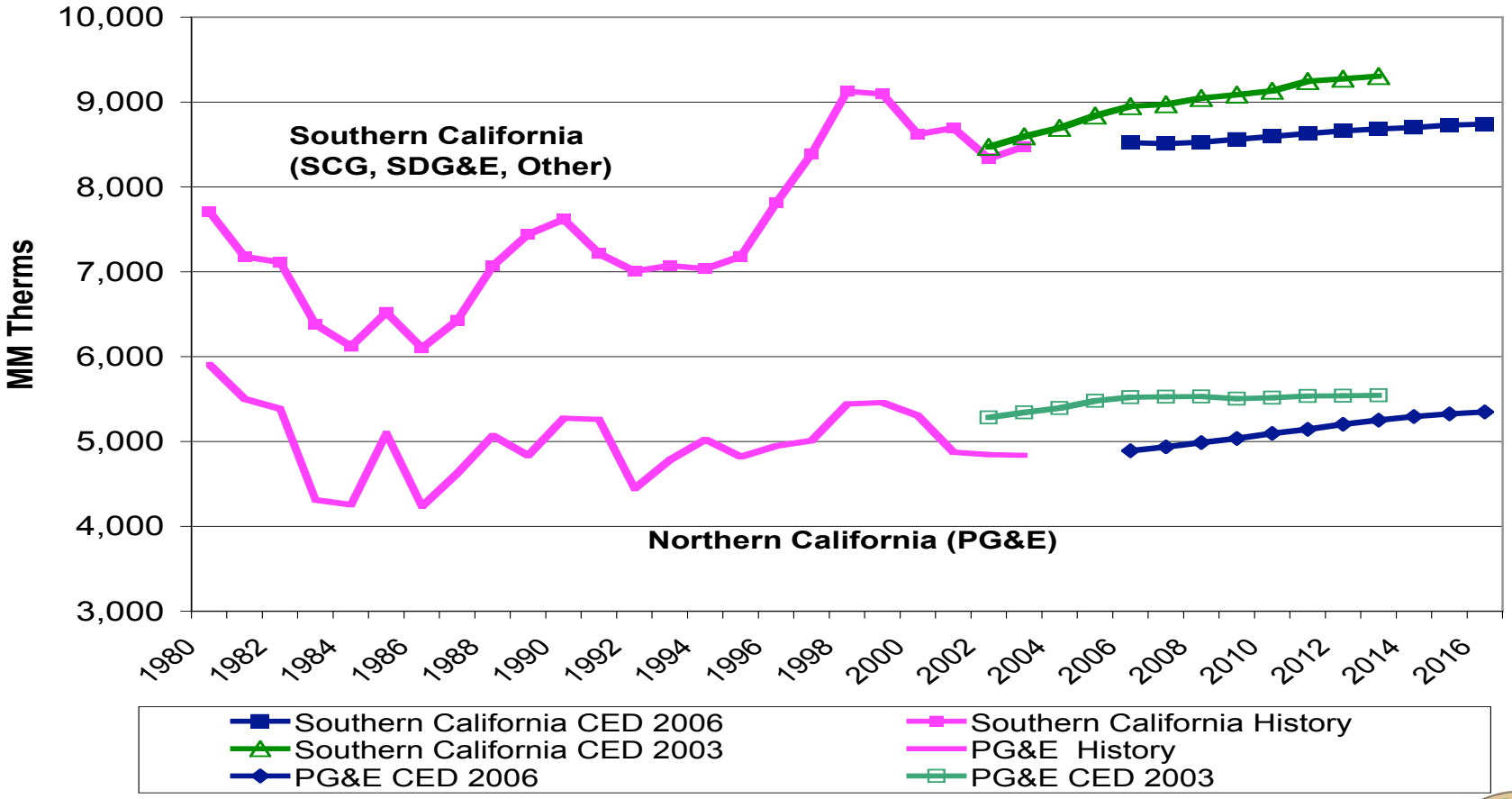
Statewide Peak Demand per Capita



Annual Peak Demand by Control Area (MW)

	NP 15/ ZP 26	South of Path 15	Total CAISO	SMUD Control Area	LADWP Control Area	Total Other Areas	Total State
2000	20,563	23,373	43,937	2,933	5,864	1,025	53,758
2003	20,088	24,610	44,698	3,543	5,918	1,144	55,303
2008	21,912	27,586	49,498	3,892	6,257	1,230	60,878
2016	24,417	30,703	55,120	4,713	6,379	1,357	67,569
Annual Growth Rates							
2000-2003	-0.78%	1.73%	0.57%	6.50%	0.31%	3.71%	0.95%
2003-2008	1.75%	2.31%	2.06%	1.90%	1.12%	1.47%	1.94%
2008-2016	1.36%	1.35%	1.35%	2.42%	0.24%	1.23%	1.31%

End User Natural Gas Demand

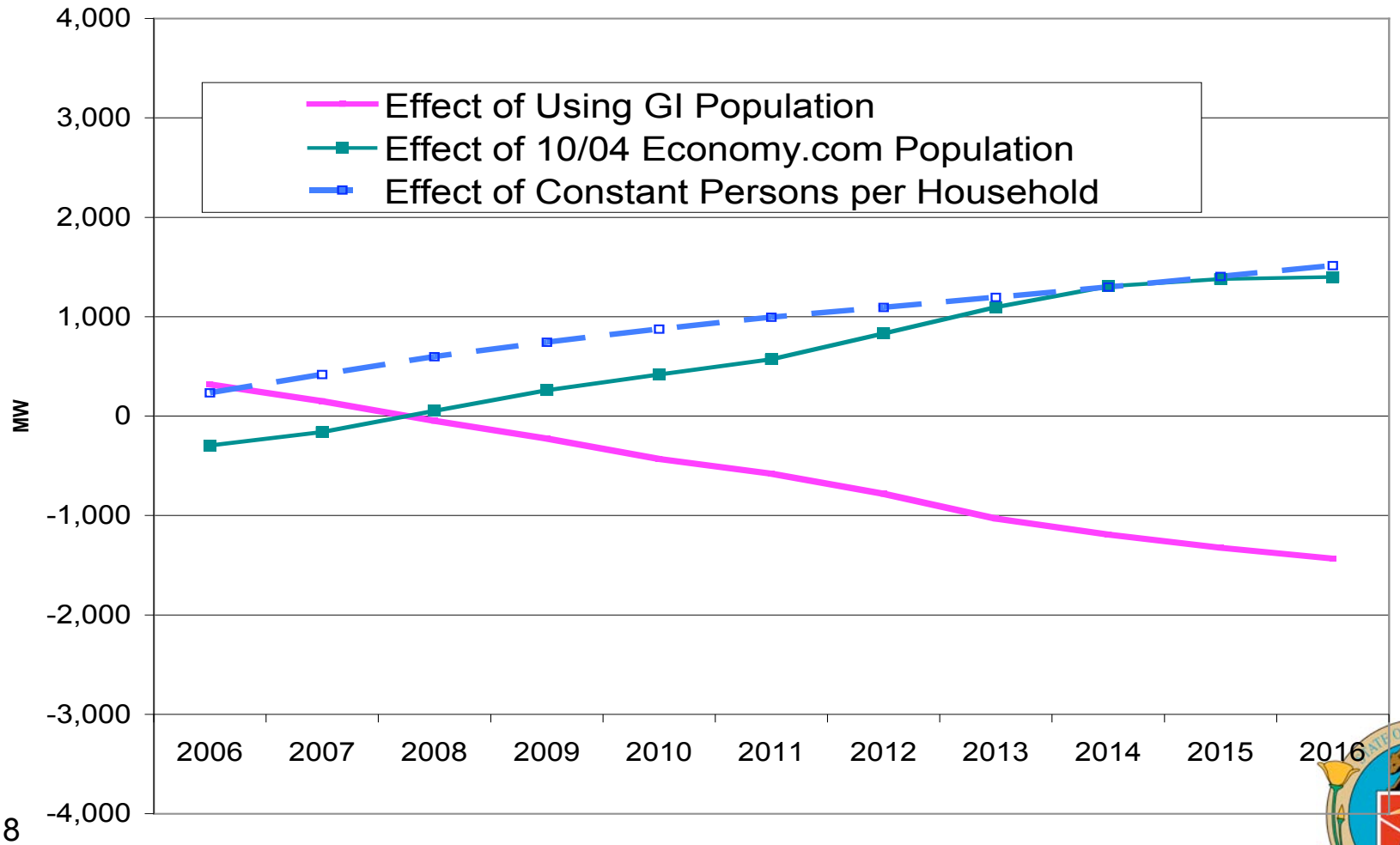


- Gas demand forecast will be discussed at July 14th Workshop

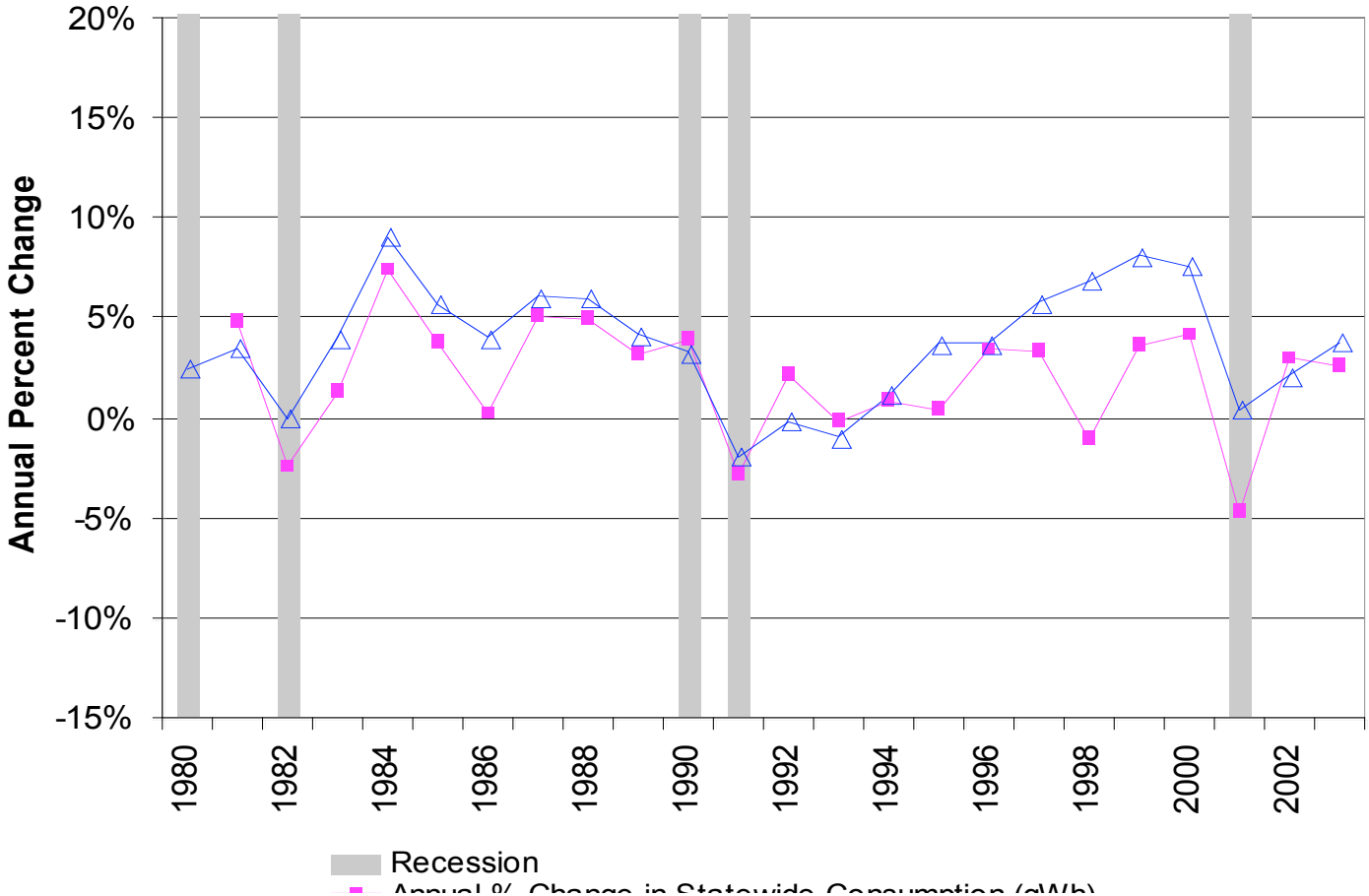
Forecast Uncertainties

- Economic/Demographic
  - Population
  - Households / Persons per household
  - Business Cycles
- Efficiency trends
  - Commercial Building energy use and building standards
- Energy Data

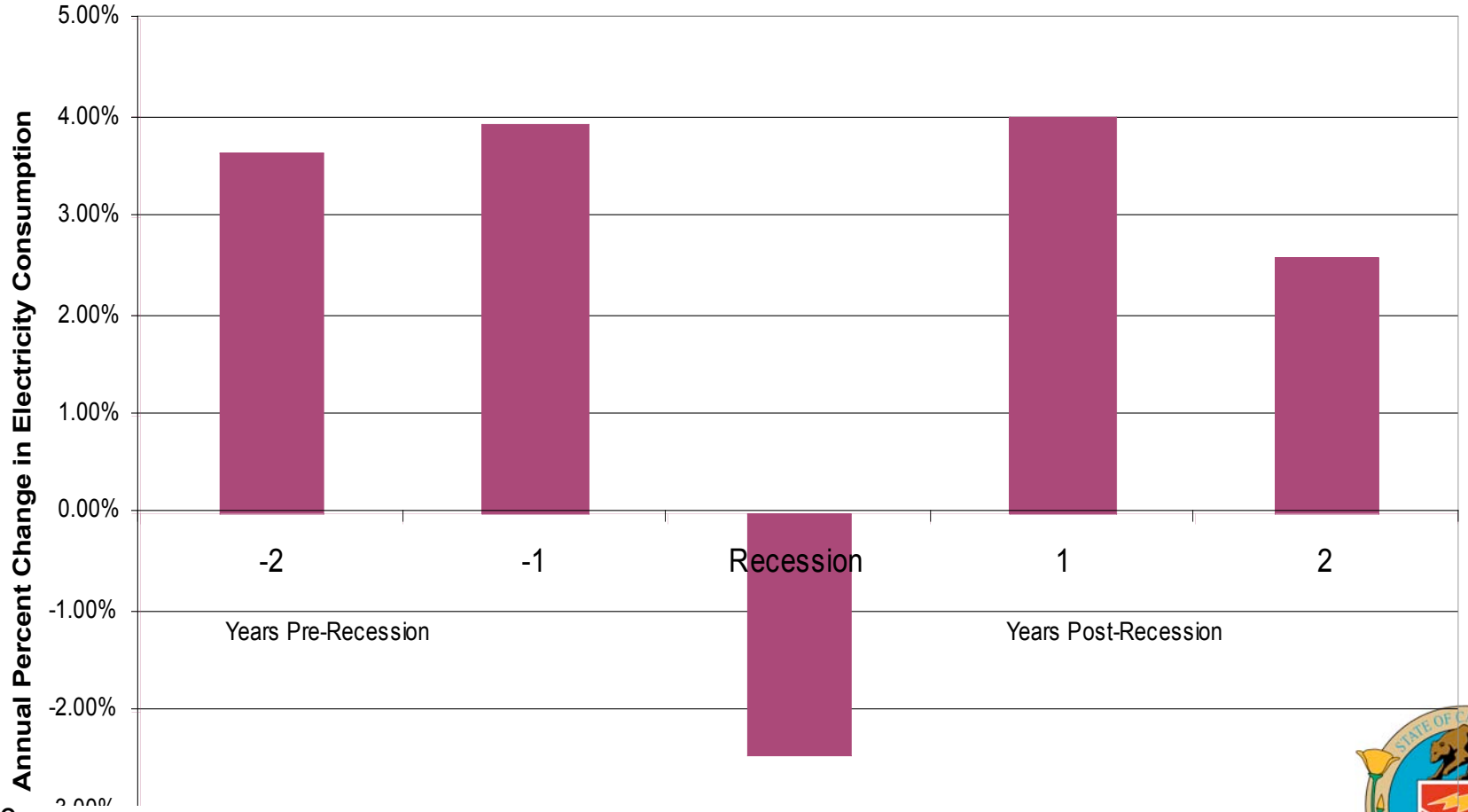
Impacts of Alternative Demographic Assumptions: Change in Statewide Peak



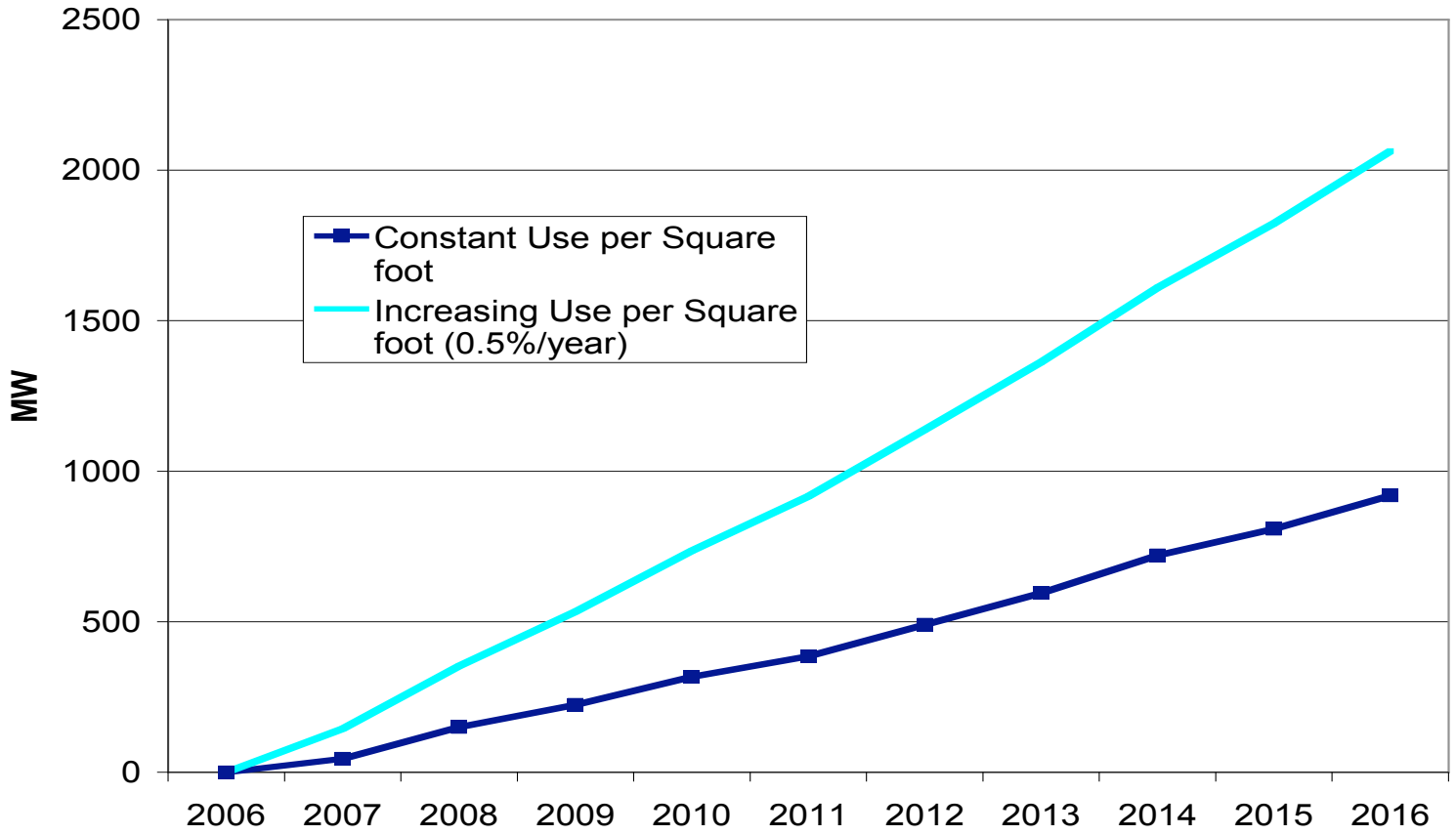
Electricity Consumption and Business Cycles Annual Percent Change in Gwh and Gross State Product



Electricity Consumption and Business Cycles: Median Change in Consumption



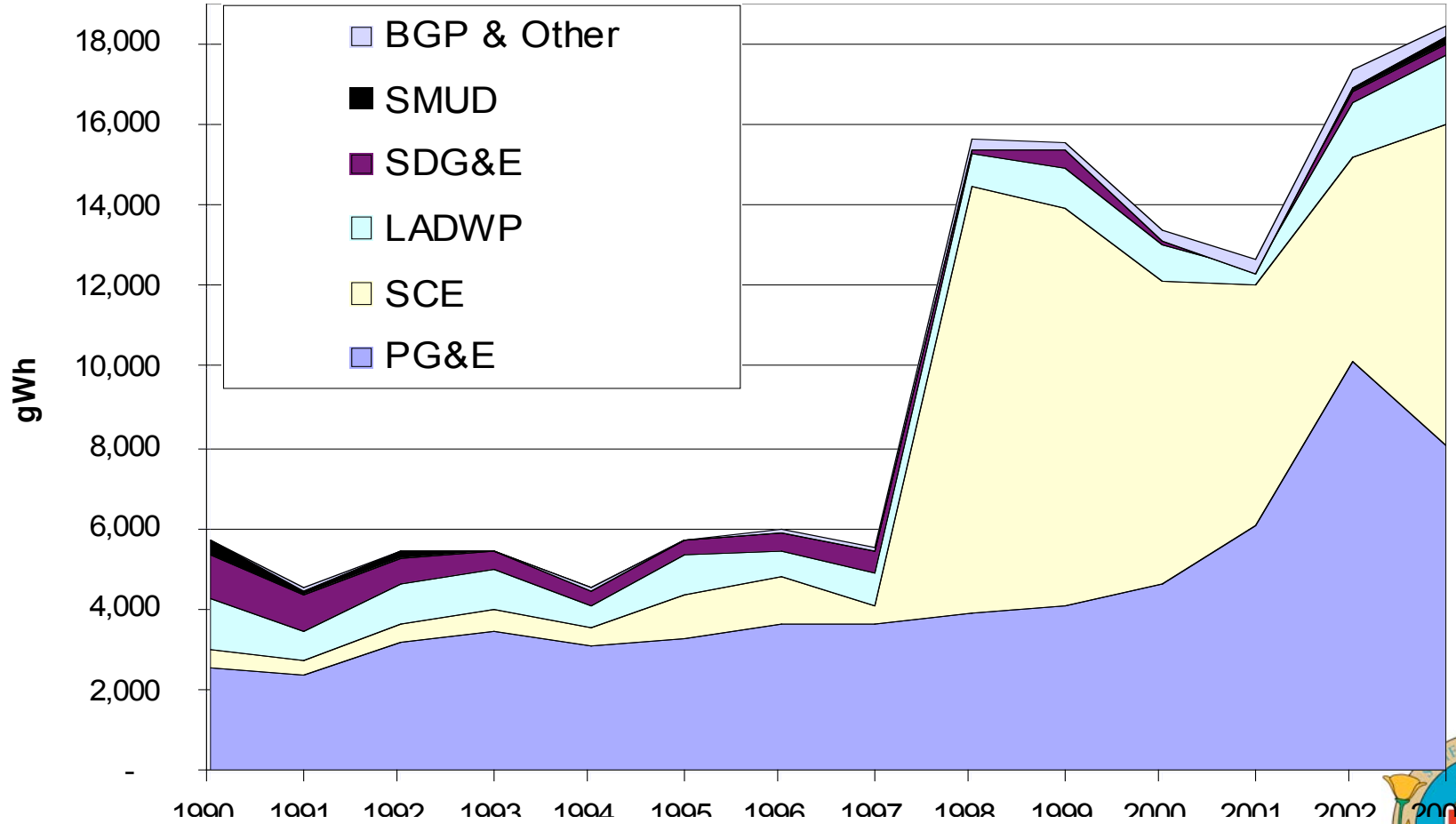
Impact on Staff Forecast of Increasing Commercial Energy Intensity



Forecast Uncertainties: Sales reporting

- Following restructuring, sales reported to the CEC as unclassified skyrocketed
- Switch to NAICs exacerbated reporting problems
- Almost 20,000 gWh of unclassified in 2003
- +/- 800 MW depending on sector

Unclassified Sales by Planning Area



Planning Area Definitions

Planning/Service Area	Utilities Included
Pacific Gas and Electric (PG&E)	PG&E, Alameda, Biggs, Calaveras Gridley, Healdsburg, Lassen MUD, Lodi, Lompoc, Merced, ModestoPalo Alto, Plumas – Sierra, Redding, Roseville, San Francisco, Shasta Silicon Valley, Tuolumne, Turlock Irrigation District, Ukiah, USBR-CVP
Sacramento Municipal Utility District (SMUD)	SMUD
Southern California Edison (SCE)	Anaheim, Anza, Azusa, Banning, Colton, MWD, Riverside, SCE, Southern California Water, USBR-Parker Davis, Valley Electric, Vernon
Los Angeles Department of Water and Power (LADWP)	LADWP
San Diego Gas and Electric (SDG&E)	SDG&E
Cities of Burbank, Glendale, and Pasadena (BGP)	Burbank, Glendale, Pasadena
Other Planning Area (OTHER)	Imperial Irrigation District (IID), Pacificorp, Sierra Pacific, Surprise Valley,Truckee-Donner
Department of Water Resources (DWR)	DWR